

Automation

~~Pls. - What~~

Automation means to
You

Aug 1955

ADMINISTRATIVE FILE

Automation

IMMEDIATE RELEASE

x

Enclosed is a pamphlet on automation prepared by this department and Al Weiss, economist for the International Brotherhood of Teamsters, AFL.

It is an interpretation of a complex subject in simple language to alert members of the Teamsters' Union to what may become the Teamsters' most pressing industrial problem.

Any part (or all) of the pamphlet, including the drawings, may be reproduced.

Local unions will distribute it in bulk, but single copies may be obtained by writing the department.

For additional information call or write:

John McCarthy
IBT - Publicity

what automation means to you

a summary of the
effects of the second
industrial revolution
on the American
worker



by
ABRAHAM WEISS, Economist

International Brotherhood of Teamsters,
Chauffeurs, Warehousemen & Helpers
of America, AFL



AUTOMATION, the new word which has been creeping into our vocabulary during the past year, means simply that machines are controlled by other machines, instead of men.

"Automated" machines have brains guided by impulses from punch cards, electronic tapes or other automatic devices such as the thermostat which turns your home furnace off and on.

In brief, two factors are involved in automation: a machine to do the work and an electronic brain to guide it, and even to correct it when it gets out of kilter.

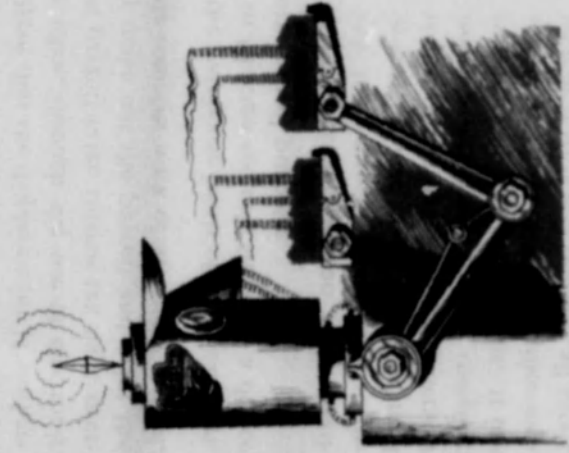
Automation is not mechanization. Mechanization means replacement of human labor by machines while automation is replacement of human control by machines.

In mechanization a man thinks for the machines; in automation a machine thinks for a machine. In mechanization a machine does the work but a man regulates it; in automation a machine does the work, yet another machine regulates it.

Automation has made great progress in automobiles, steel, communications, oil, chemicals, radio and TV manufacture, canning and bottling, cigarette production, foundries, and many other industries.

Why are we concerned with automation? Because fewer workers are producing more goods. In January 1955, for example, about 12½ million workers were able to produce as much as 13½ million produced 14 months before.





examples of automation

The Ford engine plant in Cleveland has one man controlling a unit, the length of a football field, which performs 540 separate operations and turns out 100 engine blocks an hour. Forty-one men are now used, instead of 117.

One man literally has finger-tip control over a new chemical plant at Marcus Hook, Pa. This is no Rube Goldberg cartoon fantasy but a down-to-earth reality.

Two men in a Chicago radio plant assemble 10,000 radios a day with automation. It used to require 200 men.

In the oil business, automation has advanced to the point where a handful of technicians can run a \$40 million plant by remote control from a panel of instruments.

In some plants, the entire manufacturing process, including the manufacture of the cans and cartons, is completely automatic.

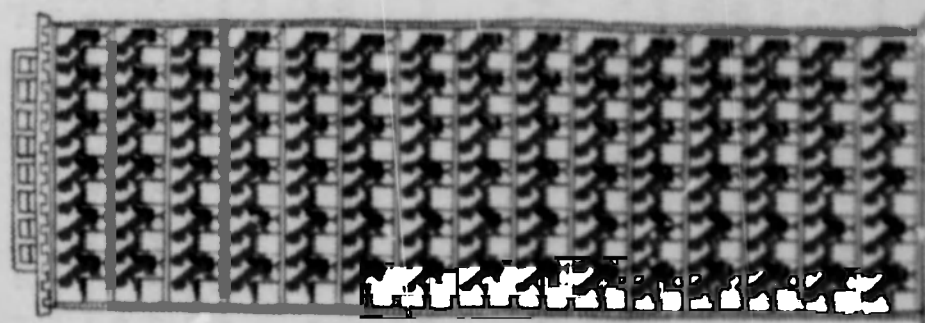
Sheet metal is fed into one part of the machine, cardboard into another part, and the produce to be canned into a third. The remainder of the process is automatic; the metal is cut, rolled, and soldered; the end is put onto the can; the can is filled; the air is exhausted; the can is sealed; a label is affixed; a group of cans is packed into a cardboard container which meanwhile has been automatically assembled; and the container is sealed.

But most automation experts believe that the displacement of workers will go farthest and fastest in the office, through the use of electronic computers. You feed them data on payroll rates, income-tax data, overtime, social security, etc., and they make out the payroll and print the checks. They also handle the highly complex work of inventory control.

For example, and of interest to the warehouse locals of the Teamsters, a large wholesale mail-order firm in Chicago recently installed a device called the Distributon, for inventory control purposes.

The Distributon can make available immediately; total orders to the instant for any catalog item, printed record of transactions for any item or items; printed record of the complete inventory in less than 3 hours. It can sort figures into 39,000 classifications, adds as it sorts and registers all totals.

One authority maintains that the record-keeping and filing functions of an insurance company, which now require a 15-story office building and a large staff, will be replaced by an electronic computer, two operators, and a small room.





Automation is going to mean a great change in your way of life, particularly in the way you earn your living. It will cut down the need for unskilled and semi-skilled workers while increasing the demand for engineers and skilled mechanics.

Automated plants report that almost half their workers are maintenance men. Automation removes routine and uninteresting work; it removes human drudgery; it also removes jobs.

Automation can give abundance to all within the foreseeable future if economists are right. They predict the average worker will soon produce as much as 5 men do now.



But this abundance for all can come only if everybody is working. No matter how efficiently a company can turn out goods it will fail if it lacks customers, and today 5 out of 6 consumers are wage earners. Without jobs they have no income; without income they cannot buy; if they do not buy, factories will close.

It is useless to speak about the progress of machines without also speaking of the equal progress of men. Machines are designed to work for the economic welfare of men. The machine was made to serve man, not man the machine.



why workers worry about automation

Prophets of automation preach that workers doing routine and boring jobs will be relieved to do more interesting work.

It is the task of unions to see to it that people are not relieved of their jobs without providing new positions for them. Men do not do boring jobs because they like them, but because they must eat.

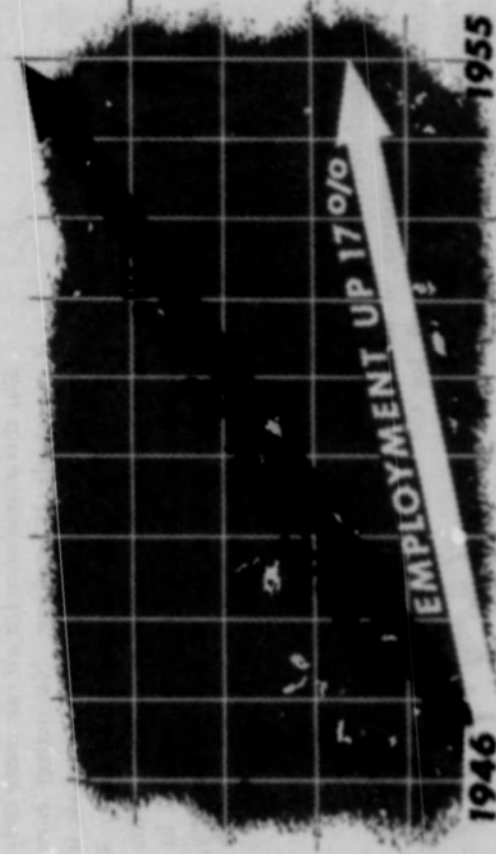
It is all very well for employers to talk glibly of "temporary dislocations" caused by automation, but to the worker who is affected it means simply that he is out of a job.

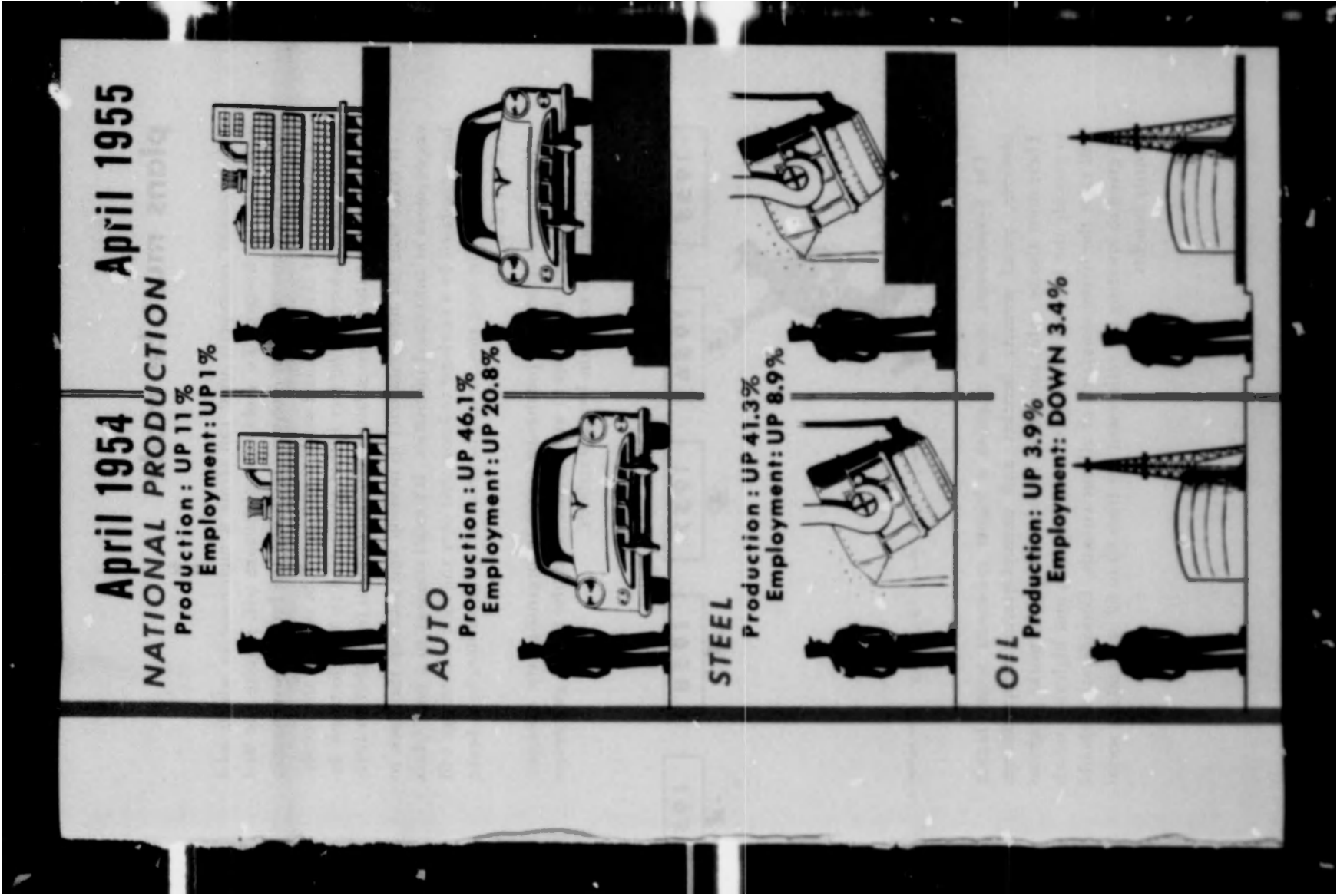
In the past year, total national production rose by 11%, but employment rose only by 1%.

Since 1946, which was the first full postwar, peacetime year, production has risen 3 times as fast as employment in the economy as a whole.

It all adds up to fewer people producing more goods.

manufacturing production and employment 1946-1955





plans must be made

Automation improperly used can create a nightmare in which men walk idle and hungry. To avoid that nightmare will require the best brains of all segments of our economy, including the Federal government.

Employers say that displaced workers will find jobs making the revolutionary new machines. The fact is that production in the electronic industry rose more than 6 times faster than employment from 1947 to 1952.

It takes time for new industries to develop and take up the slack in employment of automated industries. It's small comfort to a man who's been displaced by a machine to know that over the long run things will work out. In the long run, he will be dead—in the meantime, he is broke and out of a job.

We must increase mass purchasing power by organizing the unorganized to bring their wages up to union scale. This also means guarantees of employment to maintain living standards.

1955 1956 1957 1958 1959



The Government must establish a higher minimum wage; higher pensions, social security benefits, and unemployment compensation. There must also be stable income for farmers and public works programs to provide the low-cost housing, schools, hospitals, and highways which will raise the living standards of all our citizens. Consideration should be given to lowering the retirement age from 65 to 62 or to 60 for social security benefits.



Our schools face a real challenge and problem in an automated society, in educating our children and retraining displaced workers.

Schools must reduce to a minimum the "unskilled" for whom there will be little need and prepare our youth for a society which stresses skill, training, versatility, and a high degree of adaptability.



They must also train people to enjoy the leisure of a shorter work week because that seems an obvious answer to automation.

But it remains the job of the union to see to it that the workers who are the immediate victims of automation do not suffer in order to benefit society as a whole.



Greater productivity makes better standards possible, but it is the trade union, through collective bargaining, which insures the working man of a fair share in the fruits of automation.



goals of the Teamsters

For the working man, the answer to automation is unionism.

The union's program must have two objectives: (1) To distribute purchasing power so workers can buy as much as they produce, and (2) to protect workers directly affected by automation.

To accomplish this, the union must insist on contract provisions that will provide:

- 1 A joint union-management committee to study problems arising from automation.
- 2 New and higher job classifications and rates for workers on automatic equipment.
- 3 Production bonuses.
- 4 Revision of seniority and transfer provisions including preferential hiring, to give displaced workers a better chance to get other jobs.
- 5 A guaranteed annual wage and dismissal pay.
- 6 Provision for training and retraining at company expense of automation workers within the plant.
- 7 Broader seniority protection.



message
from the
General President



AUTOMATION can create higher living standards and more leisure through a shorter work week. It can be a boon to workers.

But it can do these things only if its benefits are distributed wisely and justly; if labor shares adequately in its benefits.

By insisting on the right to bargain on wage and other problems; growing out of automation, unions are not trying to impede progress. On the contrary, workers assured of protection and safeguards won by their union will accept changes more readily.

What labor wants is a planned transition, with shock absorbers to soften the bumps on the way to an abundant life for all America. Labor insists that proper steps be taken by industry and, if necessary, by government to protect wage earners.

Labor is for progress. It will not stand in the way of automation, but it will insist on sharing in the benefits brought about by the thinking machines of tomorrow.

*Carl Weiss
Speech delivered at the
National Trade Division Conf.
Chicago, Ill. 4/18/56*

AUTOMATION

In automation, machines take over where men used to do the work. In fact, it may even be said that automation eliminates work.

Automation is not a machine. Rather, it is a system, a process, a method under which machines automatically perform their operations in specified sequences under the control of instruments rather than workers.

Before automation, workers ran their separate machines, feeding them, guiding them, correcting them, timing their operations, and in general controlling their work at every step of the procedure.

Today, automated equipment is given advance instructions by punch cards or electronic tapes. Having received such instructions, the equipment can process raw materials, assemble the parts, correct its own errors, reject or rework parts that do not measure up to specifications and even inspect the finished product, all as one integrated operation. And what controls the entire series of integrated operations? - a central electronic brain!

The essence of automation is this: Electronic or mechanical controls run the machines, replacing human brains and hands and human judgment. Automation substitutes the instrument for the man. Not only is the instrument self-operating; it is also self-correcting, through so-called "feedback" mechanisms. "Feedback" means self-control, i.e.; a machine's ability to size up its work as it goes along and accommodate its performance to every situation. "Feedback" is an electronic correction device, hooked up to automatic machines, which acts as a watchdog to maintain certain standards.

Nearly every homeowner has an example of this sort of automation right in his house - the thermostat that turns his furnace on or off. The thermostat keeps watch of the room temperature. If it goes above or below a desired point, the heating system gets an electric signal to "correct" the situation.

In brief, then, two factors are involved in automation: machines that do the work; and control devices (or electronic brains) that supervise and, if necessary, automatically correct the production process.

You all remember reading in your history books about the Industrial Revolution, in which power made possible the use of machinery operated by workers. In this second Industrial Revolution called automation, you have power-driven machinery, which runs and corrects itself, without workers. Sounds like science-fiction, doesn't it?

No man has to watch the machine while it operates itself. This has great significance, because it means a change in the worker's role in production. Since the electronic brain takes over not only to run but to control the machine, the worker's job now is to control and supervise the instruments, rather than to perform work.

Anything man can do, the machine can do better - or almost anything.

Automation is commonly confused with mechanization. Strictly speaking, the two are different. Mechanization means the replacement of human labor by machines. Automation is mechanization without human control.

In mechanization, a man thinks for the machine. In automation, a machine thinks for a machine.

In mechanization a machine does the work while an operator regulates the performance. In automation a machine does the work while another machine or built-in feedback regulates or controls its performance.

Why are we more concerned about automation than with other technological developments? It is because automation has general applicability - to many industries and to office work as well. This contrasts with specific new machines or devices, which affect only a single process or a single industry. Automation stands for something as general as what we today call "mass production", not only in the factory, but in the office as well. It is as though the continuous strip-mill - which we associate only with a steel-mill - became the method of production in all other industries. Think of what this means in displacing labor!

Why are we concerned with automation? Because in January 1955, about 12½ million workers were able to produce as much as 13½ million produced 14 months before. Man-hours worked during this period fell 7%, while output per man-hour rose by 8%.

Automation has made great progress in automobiles, steel, communications, oil, chemicals, radio and TV manufacture, canning and bottling, cigarette production, foundries, and many other industries.

Here are some specific examples of automation: The Ford engine plant in Cleveland has one man controlling a unit, the length of a football field, which performs 540 separate operations and turns out 100 engine blocks an hour. 41 men are now used, instead of 117.

One man literally has finger-tip control over a new chemical plant at Marcus Hook, Pa. This is no Rube Goldberg cartoon fantasy but a down-to-earth reality.

Two men in a Chicago radio plant assemble 1000 radios a day with automation. It used to require 200 men.

In the oil industry, automation has advanced to the point where a handful of technicians can run an entire \$40 million plant by remote control from a panel of instruments. In some of the newer refineries now under construction, there will even be controls to watch the instruments, run the cracking processes from start to finish without human help.

Although automation has showed up strikingly in manufacturing, it is not restricted to fabricating industries. It threatens to abolish the work of many record-keeping office people.

For example, and of interest to the warehouse locals of the Teamsters, a large wholesale mail-order firm here in Chicago (John Plain, Inc.) has recently installed a device called the Distributon, for inventory control purposes. The Distributon is what is known as an electronic computer - a device for storing up information and for performing complex mathematical operations on such information - such as used to be done solely in the human head.

The Distributon can make available immediately: total orders to the instant for any catalog item; printed record of transactions for any item or items; printed record of the complete inventory in less than 3 hours. It can sort figures into 39,000 classifications, adds as it sorts and registers all totals.

Where it once took 60 tally clerks to supply week-old statistics on sales, now 10 operators provide daily reports.

In some plants the entire canning process, including the manufacture of the cans and cartons, is completely automatic. Sheet metal is fed into one part of the machine, cardboard into another part, and the products to be canned into a third. The remainder of the process

is automatic: the metal is cut, rolled, and soldered; the end is put onto the can; the can is filled; the air is exhausted; the can is sealed; a label is affixed; a group of cans is packed into a cardboard container which meanwhile has been automatically assembled; and the container is sealed. No hands!

Most automation experts believe that the displacement of workers will go farthest and fastest in the office, through the use of electronic computers. You feed them data on payroll rates, income-tax data, overtime, social security, etc, and they make out the payroll and print the checks. They also handle the highly complex work of inventory control.

A recognized authority on automation, (John Diebold) maintains that the record-keeping and filing functions of an insurance company, which now require a 15-story office building and a large staff, could be replaced by an electronic computer, two operators, and a small room.

What Does Automation Mean for the Worker?

For workers, the extensive use of automatic - controlled machines and new techniques means drastic changes in job ratings and employment opportunities. The whole basis of earning a living in our society may be transformed.

These electronic devices challenge the very usefulness of large segments of our working population. When automation makes possible, as it does, terrific output with a minimum of workers, the possibility of technological displacement of industrial workers is staggering. And how totally different will be the technological skills and training necessary to direct and maintain the new workerless production operations.

Automation cuts down the need for unskilled and semi-skilled factory or office workers doing repetitious or boring jobs, such as materials handling and machine tending. Many workers will have to upgrade themselves with more training.

Engineers and their maintenance crews composed of skilled mechanics will be needed more than ever to do maintenance work on the mechanical slaves.

It is fairly safe to conclude that over a period of years, the work force of the country will require a higher degree of skill than they do at the present time. Plants have reported that before automation, they had 70 percent operators (so-called direct labor) and 30 percent maintenance men. After automation, the figures were likely to be 55% for operators and 45% for maintenance men.

Automation eliminates routine and uninteresting jobs; it removes human drudgery from production operations. At the same time, it will probably create more responsible and challenging jobs.

Economic and Union Implications

Automation promises higher productivity and greater output - economic abundance to all.

Some economists predict that within the foreseeable future, the average worker will be able to produce at least the amount of goods now produced by 5 men.

But all the magic of industry doesn't mean a thing if people don't have jobs and money to buy the products that pour out of the electronic-brain machines. That means that employment and wages must stay high to make the marvels and miracles of automation worthwhile.

Automation can fulfill its promise of economic abundance to all only if we have a full employment economy. We must be able to purchase the goods we produce. Workers must be provided with employment and income security. We must expand purchasing power to keep pace with the growth of our ability to produce. No matter how efficiently or how cheaply a company can turn out goods, it can prosper only if there are enough customers to buy its products.

It is useless to speak about the progress of machines without also speaking of the equal progress of men. Machines are designed to work for the economic welfare of men. The machine was made to serve man, not man the machine.

Automation improperly used can create a nightmare in which man walk idle and hungry. To avoid that nightmare will require the best brains of all segments of our economy, including the Federal government.

Today 5 out of 6 workers are wage earners. Without jobs,

they have no income. Will American industry, under automation, turn out more than its customers can buy? Consumers are only consumers when they are gainfully employed. If wage earners are displaced from their jobs by automation, where will the purchasing power come from? When machines are able to do everything except buy what they make, what will ring the cash registers? A high standard of living in the future does not put food in a man's stomach when he is thrown out of work due to his displacement by a machine.

Employers say that displaced workers will find jobs making the revolutionary new machines and that this, in turn, will take up the slack. But the fact is that even in the electronic manufacturing industry production has risen much faster than employment, more than 6 times faster in the 5 years from 1947 to 1952. In addition, it takes time for new industries to develop to take up the slack in employment of automated industries. It's small comfort to a man who's been displaced temporarily by a machine to know that over the long run things will work out. In the long run, we are all dead. In the meantime, he is out of a job, without income.

Automation must be used to raise our standard of living so that our people enjoy more leisure and social benefits rather than mass unemployment. Society and the workers in our society must progress along with the gains in technology.

We must increase mass purchasing power. This means organizing the unorganized and bringing their wages up to union scale. This means a guarantee of employment to help maintain living standards.

On the government front, this means a higher minimum wage

for all workers; higher pensions and other social security benefits, including more generous unemployment compensation; stable income for farmers; and public works programs to provide the low-cost housing, schools, hospitals, and highways which will raise the living standards of all our citizens. Consideration should be given to lowering the retirement age from 65 to 62 or to 60 for social security benefits.

A recent study on the nation's manpower needs in the years ahead points out that the push-button plant will require more technicians, more skilled workers to replace the unskilled factory hands. The study also adds that "there may be almost no place left for the unskilled industrial worker." Today, even a hand trucker must be able to interpret charts to see where the supplies are needed.

Our schools, therefore, face a real challenge and problem in an automated society, in educating our children and retraining displaced workers. The schools must reduce to a minimum the "unskilled" for whom there will be little need. Our schools must prepare our youth for a society which stresses skill, training, versatility, and a high degree of adaptability to upgrading. Our schools must turn out people capable of handling other than routine jobs. Our schools must also train people to enjoy the leisure of a shorter work day and a shorter work week.

But it is the job of the union to see to it that the workers who are the immediate victims of automation do not suffer in order to provide society as a whole with long-run benefits and higher living standards.

410-
H

Though greater productivity of machines makes improved standards possible, it is the trade union, through collective bargaining, which brings such improvements to the worker. Collective bargaining insures the working man of a fair share in the fruits of automation. For the working man, the answer to automation is unionism.

It is through his trade union that the worker will see that his welfare and economic security is assured - that he will have more leisure time through shorter hours and less toil, and to enjoy that leisure, he will have a rising standard of living through higher wages and steadier employment.

The union's program must have two objectives: (1) to distribute purchasing power in the hands of workers so as to balance ability to consume^{with} the ability to produce; and (2) to achieve maximum protection for those workers directly affected by automation.

To accomplish, the union must insist on contract provisions that will provide:

1. A joint union-management committee to study problems arising from automation, with advance notice and full information on pending technological changes.
2. New and higher job classifications and rates for workers on automatic equipment whether in new plants or old, because of increased responsibility, productivity and work requirements.
3. Production bonuses so that the whole plant shares in the increased production.
4. Revision of seniority and transfer provisions including preferential hiring, to give displaced workers a better chance to get other jobs. Workers must have the right to move into jobs in these new operations.

-11-

5. A Guaranteed annual wage and dismissal pay to provide financial assistance during the transition period.

6. Provision for training and retraining at company expense of automation workers within the plant. Otherwise, they will be unable to qualify for the new jobs when current skills are no longer needed.

7. Transfers from one company plant to another where indicated by automation changes, with workers retaining some or all of their seniority rights.

The fight for higher living standards must be accompanied by, may in fact even depend upon, a shorter work week. Because of rising productivity made possible by automation, more goods will be produced in less time or by fewer workers. Unemployment will mount steadily. At the same time, our labor force continues to grow about 3/4 of a million workers a year - our sons and daughters who finish school. What work opportunities will there be for them? This, it seems to me, calls for a shorter work week, to take up the slack. A cut in hours is long overdue. The average work week of about 40 hours in manufacturing today is substantially the same as some 25 years ago.

Automation has its bright side for workers. It can eliminate much of the work that is monotonous, heavy, and dangerous. It can work for the people. It can increase the annual wealth of the nation beyond measure. It can raise living standards substantially by meeting the needs of a growing U. S. population. It can provide more and better comforts for a greater number of people. Extra hours of leisure for every American worker.

But it can do these things only if its benefits are distributed wisely and justly; if labor shares adequately in its benefits.

Through their unions, workers have won shorter hours, better

pay, paid vacations, and decent pensions. The high productivity of machines made these improved standards possible. But the unions brought them about through collective bargaining. Collective bargaining, and collective bargaining alone, insures the working man of a fair share.

Let me stress one point!

By insisting on the right to bargain on wage and other problems growing out of automation and other technological changes, unions are not trying to impede progress. On the contrary! Workers who are assured of protection and safeguards won by their union will be less inclined to resist technological change.

What labor wants is a planned transition, with shock absorbers to soften the bumps on the way to an abundant life for all America. Labor insists that proper steps be taken, by industry and by government, if necessary, to meet the threat to working men and women implicit in these technological advances.

Our major problem no longer is production but how to provide the buying power to buy the goods which we produce. The fruits of automated production must be shared in the form of higher wages and shorter hours.

Without a proper balance between production and consumption, full employment and prosperity are impossible. We want labor to have the means to keep on being industry's best customer.

Growth is an essential part of our economic health and automation contributes to that growth. If automation helps the economy to meet our needs, well and good. But as trade unionists

-13-

our concern should be that progress is not at the expense of the worker.

Why should the Teamsters be interested in automation? The answer is relatively easy. Automation will have so great an impact on our economy that every union has to be concerned. We can either wait until we are hurt by automation or prepare ourselves now to meet its problems and be ready for any necessary adjustments. My answer would be: prepare now, particularly in terms of reducing hours and help absorb the fewer people needed in factories.

There is another reason. People displaced by automation will be out competing for your jobs. People who still have jobs in automated plants will be getting higher pay and working shorter hours. Teamsters serving such plants will not want to be left behind in wage and hour benefits. Higher pay and shorter hours - for Teamsters and for other workers - are part of the social costs which industry will have to bear in order to avoid the wasting of human resources.

We must continue to protect and improve the conditions of employment of our members. We must continue to insist on a fair distribution of the fruits of productivity which come about through automation.